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SHEFFIELD, S1 3JD

Our ref: RN/MT

Your ref:

20th January 1972

Mr. D. Kent,
Conoco Europe Ltd.,
Berkeley Square House,
London W1X 5PB.

Well File

Dear Dave,

Please find enclosed a copy of our findings to date on the interval 8000 - 8400 feet in the Conoco-Gulf Well 7/9-1.

We are completely happy about the Jurassic-Cretaceous contact, the lower Kimmeridge clay, lower Kimmeridge sandy facies and the transition down into upper Oxfordian. The lack of 100% diagnostic material between 8280-8400 feet is still a matter of concern which could well be resolved following examination of the section below 8400 feet that we have already discussed.

Roveda mentions sidewall cores in his report but they are not localised - I don't suppose any material is relevant or available to this problem. Particularly since we have seen absolutely nothing suggesting Lias.

Meanwhile 8/12-1 is virtually completed, again apart from the basal section where we have Rhaetian labelled below 9045 feet. We will await the batch of cuttings before commenting on this problem.

For the remainder it would appear to be very similar Kimmeridge sequence - thickened of course - between 8555 -?9000 feet. Recycled Bathonian pollen in the Core 3 was certainly throwing us until the plankton level at the very top turned up a Kimmeridge age.

contd....

We will leave our overall correlation interpretation discussion until the 8/12-1 report.

Enclosed is our invoice for work on 7/9-1.

With best wishes and Chow!!

Yours sincerely,

Roger Neves

Roger Neves

NORTH SEA WELL

CONOCO/GULF:7/9-1

# PALYNOLOGICAL ANALYSIS OF THE JURASSIC

(8000-8400 feet)

by

R. Neves and C. Downie

January, 1972,
Sheffield.

## 1. Summary

Palynological analysis indicates that within the interval 8000-8400 feet, Lower Cretaceous shales rest unconformably (8050 feet) upon Lower Kimmeridge bituminous shales. Between 8050 and 8390 feet a continuous Upper Jurassic sequence consist of Lower Kimmeridge and probable Upper Oxfordian marine sediments with a deltaic phase of basal Kimmeridge age (8160-8270 feet).

A single palynological assemblage from 8400 feet may represent a significant age/facies (?) factor below this level.

## 2. Introduction

Cuttings samples provide the basis for this report, and 21 palynological preparations have been examined from the sequence between 8000-8400 feet.

## 3. Palynology

The spore/pollen/microplankton taxa recorded have been plotted on Table 1 which also summarises the age and depositional environment implications of the assemblages.

Three well-defined age rock units have been recorded as follows:

1. Lower Cretaceous (Valanginian/Berriasian) - 8000 to 8050 feet
2. Lower Kimmeridgian - 8060 to 8280 feet
3. Probable Upper Oxfordian - 8280 to 8390 feet

The lowest sampled horizon at 8400 feet contained an unusual association which lacked sufficient diagnostic elements to allow dating.

Supplementary details of the assemblages encountered in these intervals are given below:

Interval 8000-8050'

Microflora — Dominated completely by microplankton with disaccate pollen comparatively rare.

Age — Clearly Lower Cretaceous, possibly as old as BERRIASIAN

Depositional Environment — Open sea with minimal contribution from land based plants.

Interval 8060-8280'

Microflora — Two distinct assemblages occur in this interval and reflect the change in environmental influence between the upper and lower part of the section:

i. 8060-8150' - Microplankton dominant with progressive increase in terrestrially derived disaccate pollen towards base. Dinoflagellate genus Gonyaulacysta most common planktonic element.

ii. 8160-8280' - Spore/pollen dominated assemblages with minimal microplankton. Abundant cellular wood and plant tissue.

Age — LOWER KIMMERIDGIAN. Microplankton provide main basis for correlation; spore/pollen taxa are in line with this dating.
A few dinoflagellateswith Oxfordian ranges do not alter this assessment since they are either slightly different from typical Oxfordian material or have ranges up into Kimmeridge (unpublished data). The recognition of an Oxfordian/Kimmeridgian transition zone between 8210-8280 feet is a measure of the microfloral intermixing pointing to continuous deposition.

Depositional Environment

i. 8060-8160' - Typical Kimmeridge Clay association and preservation of palynomorphs and organic tissues.

ii. 8160-8280' - Pro-delta/deltaic environment of the paralic type with sand/shale members alternating.

Interval 8280-8390'

Microflora Dominant elements are plankton and disaccate pollen. Spores progressively reduce in numbers down the section.

Age Probably UPPER OXFORDIAN.

Depositional Environment The major occurrence of disaccate pollen in marine plankton assemblages indicates a marine depositional area not far removed from land - IN-SHORE MARINE.

Horizon 8400'

Microflora An unusual association dominated by disaccate pollen but including a single dinoflagellate taxon in appreciable numbers.

Age Not defined.

Depositional Environment Inshore marine; possibly limited access lagoonal.

4. Conclusions

1. The Lower Cretaceous boundary lies near 8050 feet.
2. Valanginian/Berriasian marine shales rest unconformably upon Lower Kimmeridge clay/shales of the typical bituminous shale facies.
3. Paralic deltaic sandstones occur near the base of the Kimmeridgian which appears to pass unconformably down into Oxfordian between 8200-8260 feet.

4. Shales with thin sandstone intercalations of pro-delta or inshore marine facies occur down to 8390 feet and are probably upper Oxfordian age.

5. An uninterrupted Upper Jurassic sequence appears to be present between 8050-8390 feet.

6. The sample at 8400 feet contains a different palynological association which may reflect an ecological or stratigraphical cause. Examination of cuttings between 8400-8535 feet would perhaps solve this problem.

7. No palynological evidence for Lower Jurassic has been observed.

| Sample Depth (cuttings) | Age | Depositional Environment | Colour | Thermal Index |
|---|---|---|---|---|
| 8000 | Valanginian/Berriasian | Marine, open sea | Yellow amber | 2.5 |
| 8020 | " | " | " | 2.5 |
| 8040 | " | " | " | 2.5 |
| 8060 | L. Kimmeridgian | Marine; restricted circulation | Yellow amber | 2.5 |
| 8080 | " | " | " | 2.5 |
| 8100 | " | " | " | 2.5 |
| 8120 | " | " | " | 2.5 |
| 8140 | " | " | " | 2.5 |
| 8160 | " | Deltaic; prodelta | " | 2.5 |
| 8180 | " | " | " | 2.5 |
| 8200 | " | " | " | 2.5 |
| 8220 | " | " | " | 2.5 |
| 8240 | " | " | " | 2.5 |
| 8260 | " | " | " | 2.5 |
| 8280 | Bathonian/Bajocian | " | " | 2.5 |
| 8300 | " | " | " | 2.5 |
| 8320 | " | " | " | 2.5 |
| 8340 | " | " | " | 2.5 |
| 8360 | " | " | " | 2.5 |
| 8380 | Lias | Brackish marine | " | 2.5 |
| 8400 | Lias | " | Amber-yellow | 2.5 - 2.6 |
| 8410 | " | " | " | 2.5 - 2.6 |
| 8440 | " | " | " | 2.5 - 2.6 |
| 8470 | " | " | " | 2.5 - 2.6 |
| 8500 | " | " | " | 2.5 - 2.6 |
| 8540 | " | " | " | 2.5 - 2.6 |
| 8560 | " | " | " | 2.5 - 2.6 |

p.t.o.

| | | | |
|---|---|---|---|
| 8580 | Not determined | - | Organic material |
| 8600 | - | - | all caved |